Attachment 2

Oil and Hazardous Materials/Technical Assistance Data System

Beryllium

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BERYLLIUM

CHRIS - Chemical Hazard Response Information System

Developed by the United States Coast Guard. 1985-2000.

Document Outline

0. OVERVIEW

Material name

BERYLLIUM
CHRIS Code BEM

Characteristics

Solid Silver color Odorless
Sinks in water.

Emergency Actions

Restrict access.
AVOID CONTACT WITH SOLID AND DUST,
Wear dust respirator and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Combustible.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Dust cloud may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry graphite, soda ash, or other inert powder.
DO NOT USE WATER ON FIRE.

Exposure

CALL FOR MEDICAL AID.

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DUST
POISONOUS IF INHALED OR IF SKIN IS EXPOSED.
If inhaled will cause coughing or difficult breathing.
If in eyes, hold eyelids open and flush with plenty of water.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.
SOLID
POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution - General

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Collection Systems: Dredge

2. CHEMICAL DESIGNATIONS

CG Compatibility Group: Not listed.
Formula: Be
IMO/UN Designation: 6.1/1567
DOT ID Number: 1567
CAS Registry Number: 7440-41-7
NAERG Guide Number: 134
Standard Industrial Trade Classification: 52229

3. HEALTH HAZARDS

Personal Protective Equipment: Self contained positive pressure breathing apparatus; clean work clothes daily; gloves; eye protection
Symptoms Following Exposure: Any dramatic, unexplained weight loss should be considered as possible first indication of beryllium disease. Dust is extremely toxic when inhaled; symptoms include coughing, shortness of breath, and acute or chronic lung disease. There is no record of illness from ingestion of beryllium. Contact with dust causes conjunctival inflammation of eyes and dermatitis.
Treatment of Exposure: INHALATION: acute disease may require hospitalization with administration of oxygen; chest x-ray should be taken immediately. EYES: flush with water for at least 15 min. SKIN: flush with water; wash with soap and water; all cuts, scratches or other injuries should receive prompt medical attention.
TLV-TWA: 0.002 mg/m^3
TLV-STEL: 0.01 mg/m^3
TLV-Ceiling: Not listed.
Toxicity by Ingestion: Grade 3; oral LD^{50} = 100 mg/kg (mouse)
Toxicity by Inhalation: Currently not available.

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Chronic Toxicity: Berylliosis of lungs may occur from 3 months to 15 years after exposure. Chronic systemic diseases of the liver, spleen, lymph nodes, bone, kidney, and other organs may also occur.
Vapor (Gas) Irritant Characteristics: Currently not available
Liquid or Solid Irritant Characteristics: Currently not available
Odor Threshold: Odorless
IDLH Value: 4 mg/m^3
OSHA PEL-TWA: 0.002 mg/m^3
OSHA PEL-STEL: 0.025 mg/m^3 30 minute peak per 8 hour shift.
OSHA PEL Ceiling: 0.005 mg/m^3
EPA AEGL: Not listed.

4. FIRE HAZARDS

Flash Point: Not pertinent
Flammable Limits in Air: Not pertinent
Fire Extinguishing Agents: Graphite, sand, or any other inert dry powder
Fire Extinguishing Agents NOT to Be Used: Water, CO^2, or halogenated extinguishing agents.
Special Hazards of Combustion Products: Combustion yields beryllium oxide fume, which is toxic if inhaled.
Behavior in Fire: Powder may form explosive mixture with air.
Ignition Temperature: Not pertinent
Electrical Hazard: Not pertinent
Burning Rate: Not pertinent
Adiabatic Flame Temperature: Currently not available
Stoichiometric Air to Fuel Ratio: 2.4 (calc.)
Flame Temperature: Currently not available
Combustion Molar Ratio (Reactant to Product): 1.0 (calc.)

5. CHEMICAL REACTIVITY

Reactivity with Water: No reaction
Reactivity with Common Materials: Reacts with acids and alkalis to form hydrogen gas.
Stability During Transport: Stable
Neutralizing Agents for Acids and Caustics: Not pertinent
Polymerization: Not pertinent
Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

Aquatic Toxicity: Currently not available
Waterfowl Toxicity: Currently not available
Biological Oxygen Demand (BOD): Currently not available
Food Chain Concentration Potential: Currently not available
GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 2
Human oral hazard: 2
Human contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

Grades of Purity: Grade AA, 99.96+%; Grade A, 99.87+%; Nuclear grade
Storage Temperature: Ambient

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Inert Atmosphere: No requirement
Venting: Open
IMO Pollution Category: Currently not available
Ship Type: Currently not available
Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

49 CFR Category: Poison
49 CFR Class: 6.1
49 CFR Package Group: II
Marine Pollutant: No
NFPA Hazard Classificaton: 4 1 0
EPA Reportable Quantity: 10 pounds
EPA Pollution Category: A
RCRA Waste Number: P015
EPA FWPCA List: Not listed

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State at 15 Degrees C and 1 ATM: Solid
Molecular Weight: 9.01
Boiling Point at 1 ATM: Not pertinent
Freezing Point: Not pertinent
Critical Temperature: Not pertinent
Critical Pressure: Not pertinent
Specific Gravity: 1.85 at 20°C (solid)
Liquid Surface Tension (Est.): Not pertinent
Liquid Water Interfacial Tension: Not pertinent
Vapor (Gas) Specific Gravity: Not pertinent
Ratio of Specific Heats of Vapor (Gas): Not pertinent
Latent Heat of Vaporization: Not pertinent
Heat of Combustion: -28,000 Btu/lb = -15,560 cal/g = -652×10^5 J/kg
Heat of Decomposition: Not pertinent
Heat of Solution: Not pertinent
Heat of Polymerization: Not pertinent
Heat of Fusion: 260.0 cal/g
Limiting Value: Currently not available
REID Vapor Pressure: Currently not available

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